

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NdP 87281	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/14544	International filing date (<i>day/month/year</i>) 12.12.2003	Priority date (<i>day/month/year</i>) 20.12.2002
International Patent Classification (IPC) or both national classification and IPC C10G67/04		
Applicant ENI S.P.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☒ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 16.07.2004	Date of completion of this report 18.04.2005
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 </div> </div>	Authorized Officer Gilliquet, J-N Telephone No. +31 70 340-4573



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International application No. PCT/EP 03/14544

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-32 as originally filed

Claims, Numbers

1-36 as originally filed

Drawings, Sheets

1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application; the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

II. Priority

1. ☒ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:

☒ copy of the earlier application whose priority has been claimed.

☐ translation of the earlier application whose priority has been claimed.

2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid.

Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-36
	No: Claims	
Inventive step (IS)	Yes: Claims	1-36
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-36
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

- 1 The following document is referred to in this communication:
D1 : US 5 932 090 A (DELBIANCO ALBERTO ET AL) 3 August 1999 (1999-08-03)
- 2 Document D1 (See claim 1 and Fig. 1 of D1), which is considered to represent the most relevant state of the art, discloses a process for the conversion of heavy crude oils and distillation residues to distillates comprising the following steps: admixing said heavy crude oil or distillation residue with a suitable hydrogenation catalyst to obtain a slurry, transferring said slurry to a hydrotreating reactor and introducing hydrogen or a mixture of hydrogen and H₂S to said hydrotreating reactor and hydrotreating said heavy crude oils at a temperature of between 370 and 480 DEG C., thus converting said heavy crude oils and distillation residues to distillates;
transferring a stream containing the hydrotreated reaction product and the catalyst to a distillation zone and distilling a stream containing the hydrotreated reaction product and the catalyst in the slurry phase and separating the most volatile fractions;
deasphalting a high-boiling fraction obtained in the distillation step by transferring said high-boiling fraction to a deasphaltation zone obtaining two streams, one consisting of deasphalted oil (DAO), the other comprising asphaltenes, catalyst in slurry phase, coke and rich in metals coming from the initial charge;
recycling at least 60% of said stream comprising asphaltenes, catalyst in slurry phase, coke, and rich in metals, to the hydrotreating zone

From this, the subject-matter of independent claim 1 differs in that:
a fraction of the stream containing asphaltenes, called flushing stream, is sent to a treatment section with a suitable solvent for the separation of the product into a solid fraction and a liquid fraction from said solvent can be subsequently removed.

- 2.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT)
The problem to be solved by the present invention may be regarded as how to improve this process by reducing the amount of flushing fraction and by upgrading (see p.12 § 1 of present description).

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- 2.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) because no documents of the prior art on file disclose this distinguishing feature nor gives a hint to its effect.

